

REMARKS

I. INTRODUCTION

Claims 1, 3-20, 2-36 and 38-49 are pending in this application. By this amendment claims 1, 13, 14, 15, 19, 33 and 34 are amended to correct minor errors and to simply issues for appeal if such appeal is necessary. No new matter has been added by this amendment.

II. DECLARATION UNDER 37 C.F.R. § 1.132

The request for continued examination (RCE) filed on December 14, 2005 included a declaration by one of the inventors, Mark A. Webster, distinguishing the invention over the references of record. The March 8, 2006 Office Action did not acknowledge this declaration. Based on the new grounds of rejection set forth in the Office Action, Applicants presume that the declaration was at least partially persuasive in overcoming the previous rejection. However, because the new grounds of rejection still rely upon Preuss, a reference distinguished over in the Declaration, the Examiner is respectfully requested to consider the evidence in the Affidavit and to comment on the affidavit in accordance with the Examiner's responsibilities as set forth in MPEP § 716.10(B). § 716.10(B) states:

Evidence traversing rejections, when timely presented, must be considered by the examiner whenever present. All entered affidavits, declarations, and other evidence traversing rejections are acknowledged and commented upon by the examiner in the next succeeding action. The extent of the commentary depends on the action taken by the examiner. Where an examiner holds that the evidence is sufficient to overcome the *prima facie* case, the comments should be consistent with the guidelines for statements of reasons for allowance. See MPEP § 1302.14. Where the evidence is insufficient to

overcome the rejection, the examiner must specifically explain why the evidence is insufficient. General statements such as "the declaration lacks technical validity" or "the evidence is not commensurate with the scope of the claims" without an explanation supporting such findings are insufficient.

III. ALLOWABLE SUBJECT MATTER

Applicants appreciate the Examiner's indication that claims 8, 9, 18, 19, 31-33, 44 and 45 would be allowable if rewritten to incorporate the features of the independent claim and any dependent claims. However, for the reasons set forth herein, Applicants respectfully submit that all pending claims define patentable subject matter.

IV. REJECTIONS UNDER 35 U.S.C. § 103(a)

Claims 1, 3-20, 22-36, 38-43 and 46-49 stand rejected under 35 U.S.C. § 103(a) over U.S. Patent 6,590,889 to Preuss *et al.* (hereinafter "Preuss") in view of U.S. Patent 6,091,932 to Langlais (hereinafter "Langlais"). Applicants respectfully traverse the rejection.

i. Introduction

In particular, Applicants respectfully submit that the combination of references neither discloses nor suggests a method of wireless communication using a dual packet configuration, comprising, inter alia, modulating a first portion of each packet solely according to a serial modulation, and modulating a second portion of each packet according to a parallel modulation, wherein the modulating a second portion of each packet comprises modulating according to orthogonal frequency division multiplexing (OFDM), as recited in each of independent claims 1, 20 and 36.

At the outset, Applicants believe that the Examiner has not fully appreciated the significance of the terms “parallel” and “serial” and more specifically, the significance of “OFDM,” that is, multi-tone modulation as it is used in the claims. A serial modulation is also known as a single-carrier modulation or as a single-tone modulation. The term serial implies all the data (BPSK, QPSK, QAM) modulates the envelope of the single-carrier serially in time. For example, a new QAM-symbol envelop-modulates the single carrier at the symbol rate. Preuss uses single-carrier modulation. For direct sequence spread spectrum, the single-carrier is envelop-modulated with a higher-rate "chipping" sequence (CDMA).

By parallel modulation in our invention, we synonymously mean OFDM (orthogonal frequency division multiplexing), DMT (discrete multi-tone), or parallel-tone. Tone and carrier are synonymous. This type of signal is actually comprised of many single-carrier carrier signals stacked side-by-side in frequency (frequency division multiplexing). Each carrier is individually envelop-modulated. Each carrier is often spaced from the other carriers in such a way that they are orthogonal (OFDM). This means an IFFT can be used to synthesize the signal in the transmitter, and an FFT can be used in the receiver to recover. This type of modulation is well known in the field of xDSL communications.

ii. Rejection under § 103(a) based on combination of Preuss and Langlais

Preuss teaches a data communication system that can accommodate terminals having different throughput capabilities by allocating cyclically rotated phases of a common code. One or more shifts of a cyclic orthogonal code are assigned to a terminal. Thus, the difference between lower and higher speed terminals is that higher speed terminals are allocated more shifts of the same code. This allocation is not related to the modulation within a particular packet. The

Examiner alleges in the Office Action that Preuss teaches a transmitter that uses a dual packet configuration (FIG. 3 and column 6) for wireless communication, comprising a first modulator that modulates a first portion of each packet (header) solely according to a serial modulation (BPSK) and a second modulator that modulates a second portion of each packet (payload) solely according to a parallel modulation (QAM, at FIG. 3). The Examiner admits that Preuss does not teach OFDM and relies upon Langlais to teach this type of modulation. The Examiner states that both Langlais teaches that BPSK is a serial modulation technique and OFDM is a parallel or multi-carrier modulation technique. Applicants do not dispute that both BSPK and OFDM are known modulation techniques. Applicants do dispute however, the Examiner's assertion that since Preuss teaches iFFT or FFT and Langlais teaches BPSK as single carrier modulation and QM as multi-carrier modulation, that it would have been obvious to one of ordinary skill in the art to adapt OFDM to Preuss' system as OFDM is known in the art. This statement is conclusory and completely unsupported by Preuss' disclosure or what was known in the art at the time of the invention.

Based on the Examiner's statements in the Office Action, Applicants believe that the Examiner may not appreciate the fact that binary phase-shift keying (BPSK) is actually 2-QAM. In Figure 3 of Preuss, a packet container comprising a data header 302 and payload portion 300 is illustrated. The header is modulated according to BPSK or 2^m -ary QAM where $m=1$, while the payload is modulated according to 2^m -ary QAM where $m>1$. In the examples of Figures 6-12, different values of m from 2 to 8 are illustrated: that is, 4 QAM to 256 QAM. Thus, the entire packet is being modulated according to the same modulation technique — 2^m -ary QAM — which, is a serial modulation technique in that data is not being transmitted simultaneously on sub-carriers as in the sense of the language of the claims and in common usage in the art of

signal processing. As discussed above, QAM is serial in that it is not using frequency division multiplexing. In contrast, an OFDM carrier signal is the sum of a number of orthogonal carriers, with baseband data on each sub-carrier being independently modulated commonly using some type of quadrature amplitude modulation (QAM) or phase-shift keying (PSK). Thus, the distinction between Preuss and the claimed invention is that in Preuss, a single packet is modulated according to one type of QAM in one portion and a different type of QAM in the other portion, while in the system of the claimed invention, a packet header is modulated according to a serial modulation technique (such as 2^m -ary QAM) and the payload is modulated according to OFDM parallel modulation whereby individual sub-carriers, each carrying a 2^m -ary QAM modulated baseband signal. Thus, parallel in this context refers to the frequency division multiplexing, not to the QAM modulation itself applied to each sub-carrier. Even under the later interpretation, it is still incorrect because QAM is serial with respect to the current modulated signal.

Applicants believe that in interpreting the claim language, the Examiner has failed to do so from the perspective of the person of ordinary skill in the art in view of the context of the specification and has instead substituted an abstract interpretation of the claim terms which, has limited the claims to simply requiring two different modulation techniques in a single packet. The Examiner's erroneous interpretation has caused Applicants to expend unnecessary resources prosecuting this application.

In the recent Federal Circuit decision, Phillips v. AWH Corp. the Federal Circuit blasted this type of abstract claim construction. The Court's decision affirmed that claims are to be construed in the first instance with respect to the specification and the prosecution history.

Phillips v. AWH Corp., 415 F.3d 1303 (Fed. Cir. 2005). The Court stated that the inquiry into how a person of ordinary skill in the art understands a claim term provides an objective baseline from which to begin claim interpretation. See Innova, 381 F.3d at 1116. That starting point in construing claims is based on the well-settled understanding that inventors are typically persons skilled in the field of the invention and that patents are addressed to and intended to be read by others of skill in the pertinent art. See Verve, LLC v. Crane Cams, Inc., 311 F.3d 1116, 1119 (Fed. Cir. 2002) (patent documents are meant to be "a concise statement for persons in the field"); In re Nelson, 47 C.C.P.A. 1031, 280 F.2d 172, 181, 1960 Dec. Comm'r Pat. 369 (CCPA 1960) ("The descriptions in patents are not addressed to the public generally, to lawyers or to judges, but, as § 112 says, to those skilled in the art to which the invention pertains or with which it is most nearly connected.")

Importantly, the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification. This court explained that point well in Multiform Desiccants, Inc. v. Medzam, Ltd., 133 F.3d 1473, 1477 (Fed. Cir. 1998):

It is the person of ordinary skill in the field of the invention through whose eyes the claims are construed. Such person is deemed to read the words used in the patent documents with an understanding of their meaning in the field, and to have knowledge of any special meaning and usage in the field. The inventor's words that are used to describe the invention--the inventor's lexicography--must be understood and interpreted by the court as they would be understood and interpreted by a person in that field of technology. Thus, the court starts the decision making process by reviewing the same resources as would that person, viz., the patent specification and the prosecution history.

See also Medrad, Inc. v. MRI Devices Corp., 401 F.3d 1313, 1319 (Fed. Cir. 2005) ("We cannot look at the ordinary meaning of the term . . . in a vacuum. Rather, we must look at the ordinary

meaning in the context of the written description and the prosecution history."); V-Formation, Inc. v. Benetton Group SpA, 401 F.3d 1307, 1310 (Fed. Cir. 2005) (intrinsic record "usually provides the technological and temporal context to enable the court to ascertain the meaning of the claim to one of ordinary skill in the art at the time of the invention"); Unitherm Food Sys., Inc. v. Swift-Eckrich, Inc., 375 F.3d 1341, 1351 (Fed. Cir. 2004) (proper definition is the "definition that one of ordinary skill in the art could ascertain from the intrinsic evidence in the record"). Phillips v. AWH Corp., 415 F.3d 1303, 1314 (Fed. Cir. 2005)

In the Phillips opinion, the Federal Circuit reiterated the principle that patent "claims" define the metes and bounds of the patentee's property right, much like a deed to a piece of land. Heavy reliance on the dictionary divorced from the intrinsic evidence risks transforming the meaning of the claim term to the artisan into the meaning of the term in the abstract, out of its particular context, which is the specification.

Thus, interpreting the claims of the instant application from the perspective of the person of ordinary skill in the art, in light of the teaching of the specification, it becomes clear that claim language specifying modulating a first portion of each packet solely according to a serial modulation, and modulating a second portion of each packet according to a parallel modulation, wherein the modulating a second portion of each packet comprising modulating according to orthogonal frequency division multiplexing (OFDM) means that both serial and parallel modulation techniques are used in the same packet. Preuss does not teach transmitting a portion of a packet according to a serial modulation techniques and a portion according to parallel modulation technique. Preuss teaches modulating a header according to 2-QAM and the rest according to 2^m -ary QAM with $m > 1$. In order to be like the claimed invention, Preuss would

have to take his payload portion, perform frequency division multiplexing on it and effectively create a plurality of different sub-carriers that are each modulated according to 2^m -ary QAM. He does not do this nor is their suggest of doing it in Preuss. The reason for this is that Preuss has not contemplated the same problem as the inventors of this application. Langlais likewise has failed to even identify the same problem that is targeted by this application. Langlais is purely an OFDM-based system. However, other than applicant's own disclosure of a novel packet that allows 802.11a and 802.11b devices to operate within the same network without interfering with one another by using a transmitter that modulated the first portion according to serial modulation (a scheme that can be read by both a and b devices) and a second portion according to parallel OFDM (a scheme that can only be read by the a devices), there is no motivation in either Preuss or Langlais to make the combination, and even if the combination is made, it does not yield or render obvious the claimed invention.

The dual packet configuration of the claimed invention would not have been obvious from the mere fact that in Preuss a first portion of a packet is modulated according to one modulation technique and the second according to a different order of the same modulation technique, both of which are serial. Accordingly, withdrawal of the rejection based on the combination of Preuss in view of Langlais is respectfully requested.

V. CONCLUSION

Applicants submit that this application in condition for allowance. Favorable reconsideration and prompt allowance in view of the foregoing amendments and following remarks are respectfully requested. Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number listed below.

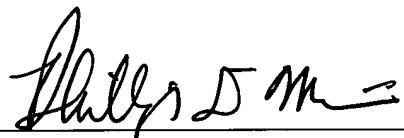
In the event any variance exists between the amount enclosed and the Patent Office charges, please charge or credit any difference to the undersigned's Deposit Account No. 50-0206.

Respectfully submitted,

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